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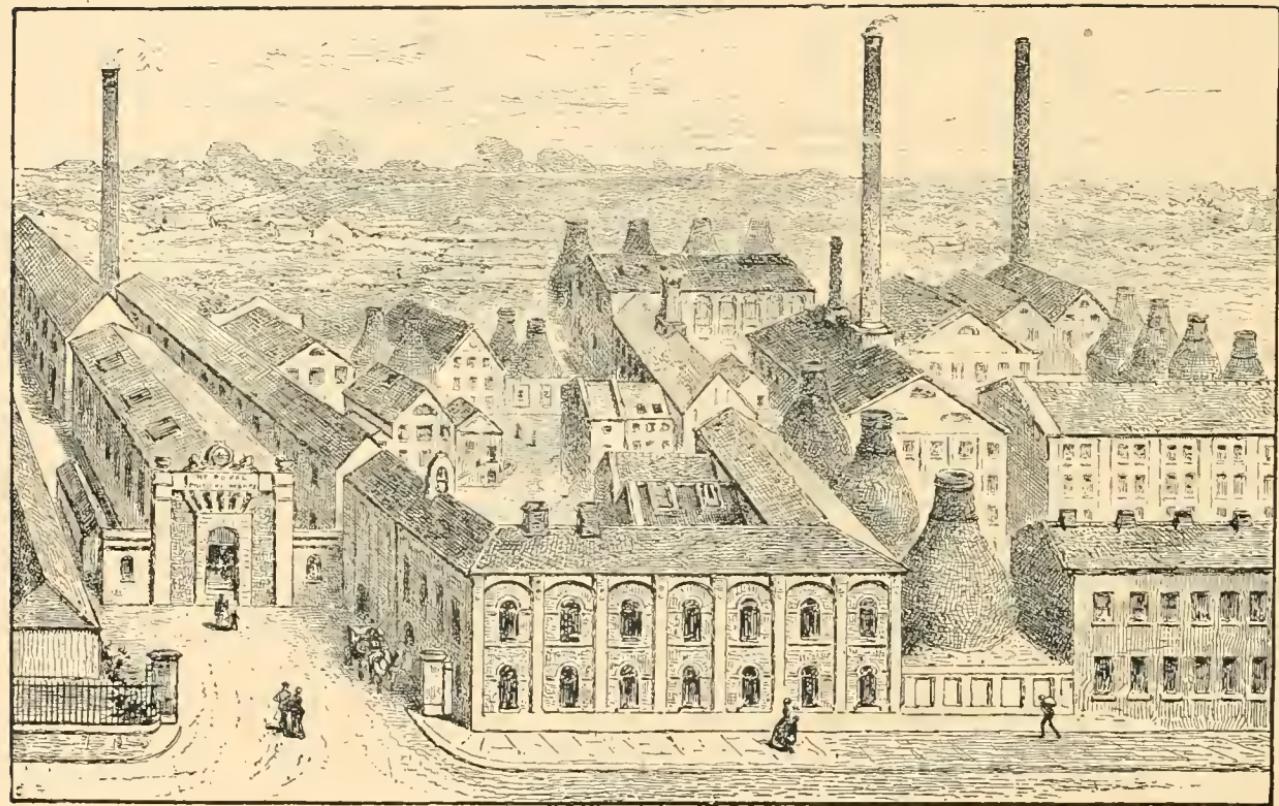
A GUIDE
Through
The Royal Porcelain Works,
Worcester.

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VIEW OF WORKS.



A GUIDE
THROUGH
THE ROYAL PORCELAIN WORKS,
WORCESTER.

E. P. EVANS, MANAGING DIRECTOR

THE
Productions of The Royal Porcelain Works
MAY BE OBTAINED
OF THE
Principal China Dealers throughout the World.

The Public is particularly requested to observe that the productions of THE ROYAL PORCELAIN WORKS bear this REGISTERED TRADE MARK, either impressed in the Ware or printed upon the Glaze.

The following Names and Marks are also registered as Trade Marks:—"ROYAL WORCESTER," "THE ROYAL PORCELAIN WORKS," "THE ROYAL PORCELAIN WORKS, WORCESTER," "THE WORCESTER ROYAL PORCELAIN WORKS," and the old Worcester Marks—



For Marks on Worcester Porcelain see Pages 41 to 46.

The PERFORATED PORCELAIN and other WARES made at GRAINGER AND CO.'S ROYAL CHINA WORKS (now carried on by the same Proprietary as the Royal Porcelain Works) are marked with this Registered Trade Mark.



Architecture



In consequence of the increasing number of Visitors desirous of seeing the process of China Manufacture, it has become necessary to re-arrange the conditions under which they can do so.

Since April 1st, 1880, a charge of Sixpence has been made for each Visitor, who is entitled to a "Guide Book."

This arrangement is made solely with a view to secure better attention for Visitors, and to remove any pretence for the acceptance of Gratuities by the Employés of the Company, who are strictly forbidden to receive any fee or reward.

Any complaint of inattention or incivility addressed to the Managing Director will be promptly dealt with.



VIEW OF THE MUSEUM.



DESCRIPTION OF ILLUSTRATIONS.

The View of the Works is based on a Photograph taken from the tower of the Cathedral. The site is that of the establishment founded by Messrs. Chamberlain, some portion of which at one time belonged to Dr. Wall, when a partner in Warmstry House. Of the buildings erected by Messrs. Chamberlain some still remain, but the greater part have been replaced by larger workshops and warehouses, to meet extended business and modern requirements. The first important addition was made in 1840, when the union took place between Flight and Barr and Chamberlain; the next in 1851, 52-53, under Kerr and Binns; and more recently and much more extensively under the present Company since 1862.

The Museum contains specimens of Worcester Porcelain of all periods arranged chronologically, from the commencement in 1751 to the present time. Also a collection of fine Vases, etc., of recent manufacture.

The Mill.—The first floor is shewn where the large pans for grinding stone and flint, and also the glaze and colour pans, are placed.

Slip House.—The Slip House arrangements may appear to the visitor rather complicated, from the number of pumps, sisters, and presses which are employed; but the description we have given of the process will, we trust, be sufficient to make it understood.

The Thrower.—We have given two illustrations of this branch of the art. The Egyptian thrower is copied from the Theban mural painting as given by Birch, Brongniart, and other authorities. The English thrower shows the present English system.

DESCRIPTION OF ILLUSTRATIONS.

The Pressing Shop gives a general view of one of the workshops in the Royal Porcelain Works. All kinds of pressed and ordinary useful wares are made here; soup tureens and covered dishes, &c., for dinner services, comports for dessert services, teapots, jugs, and the various etceteras for the breakfast table, all belong to this department.

Ornamental Porcelain.—This definition includes figure making, vase making, and the countless variety of decorative works which come under this head, including flower making and piercing.

The Oven is always a subject of interest to the scientific observer, particularly when the great heat required in a porcelain furnace is explained. To judge and control this power requires much experience, nerve, and skill.

The Interior of the Oven is very instructive, as it shows the position suitable for the various wares. Some will bear more fire than others, and are consequently put in hotter places. Plates will bear more fire than cups, cast ware than pressed ware. It is the business of the fireman to see that each seggar is put in its proper place.

The Dipping Room.—The illustration shows the ordinary process in glazing useful wares. All ornamental goods are subject to the same treatment, requiring somewhat more careful trimming afterwards. The ware having been dipped is placed in a stove to dry; it is then taken by the trimmer, who removes any superfluous glaze, after which it is fired.

The Painting and Gilding Room.—This room is selected as being easy of access, and the workmen being typical of a large number in other parts of the manufactory.

The Printing Room shows the printers at their presses; the transmitters, who place the prints on the wares; and the cutters, who prepare the paper for them.

The Burnishing Room, where the ware is received from the Enamel Kilns, shows the women at work in this department.



THE ROYAL PORCELAIN WORKS.

INTRODUCTION.

THIE extraordinary mania for Ceramics at the present time is not peculiar to our age. The history of our art throughout the world teaches us that it has been cultivated in all ages and under every variety of circumstances, and at times under the most distinguished patronage.

There are many reasons why this important and truly beautiful art should engage the attention of the people.

The learned BRONGNIART says (*"Traité des Arts Céramiques,"*)—"I know of no art which presents in the study of its practice, its theory, and its history, so many interesting and varied considerations as the Ceramic Art."

We regard it as the graphic medium of antiquity. The clay so sensitive in the hands of the potter exhibits the most subtle expression of the actor's will, and presents to us the mind and character of ancient peoples who may have left no other trace behind.

BIRCH says—"The history of the art of working in clay, from its rising amongst the oldest nations of antiquity till the present time, resolves itself into two great divisions which have engaged the attention of two distinct classes of enquirers, namely, the technical or scientific part, comprising all the details of material, manipulation and processes; and secondly, the historical portion, which embraces not only the history of the art itself, and the application of ancient literature to its elucidation, but also an account of the light thrown by monuments in clay on the history of mankind."*

* Birch's "Ancient Pottery and Porcelain"

INTRODUCTION.

The study, therefore, is neither deficient in dignity, nor limited to trifling investigations, nor rewarded with insufficient results.

A knowledge of the origin and progress of any branch of art must also be of immense importance to its future development and improvement. This is particularly true of the art of working in clay, both from its universal diffusion and from the indestructible nature of its products.

Entirely sympathising with these sentiments, the present *brochure* has been written, not with an idea of giving a history of porcelain manufacture in its technical or scientific details, nor the history of the art with reference to nations, but for the purpose of answering the questions so frequently put by visitors, respecting the various processes of manufacture at The Royal Porcelain Works.

Everyone being interested in the manufacture of porcelain, it is our desire to explain the processes in the most simple manner, and to endeavour to make a visit instructive as well as interesting, and possibly to direct attention to the geological, chemical, and technical studies which are involved in its practice.

The manufacturers of The Royal Porcelain Works embrace the following varieties—

Fine Porcelain.

Parian.

Ivory Porcelain, a speciality.

Majolica.

Vitreous Stone Ware (semi-porcelain) a speciality.

Terra Cotta, &c., &c., &c.

The raw materials consist of

China Clay, from Cornwall.

Fireclay, from Broseley.

China Stone, Cornwall.

Marl, Broseley.

Felspar, Sweden.

Flint, Dieppe.

Fireclay, Stourbridge.

Calcined Bones, both home and American,
&c., &c., &c.

INTRODUCTION.

The styles of decoration in use at THE ROYAL PORCELAIN WORKS embrace all those usual on pottery and porcelain. The following are specialities more or less peculiar to the works :—

- Perforated Porcelain.
- Ivory Porcelain.
- Raphael-esque Decoration.
- Bronze and Metallic Decorations, in various styles.
- Jewelled Porcelain.
- Enamels on Royal Blue (Worcester enamels).
- Modelled and Coloured Golds.
- Oriental Renaissance Decorations, in a variety of new styles in ivory, gold, and colours.

Visitors to THE ROYAL PORCELAIN WORKS desirous of seeing the Processes of manufacture are conducted over the Works in the following order :—

The Mill.	Glost Oven.
The Throwing and Turning Room.	Painting and Gilding Room.
Figure Making Room.	Burnishing Room.
Biscuit Oven.	The Museum.
Dipping Room.	





THE MILL.

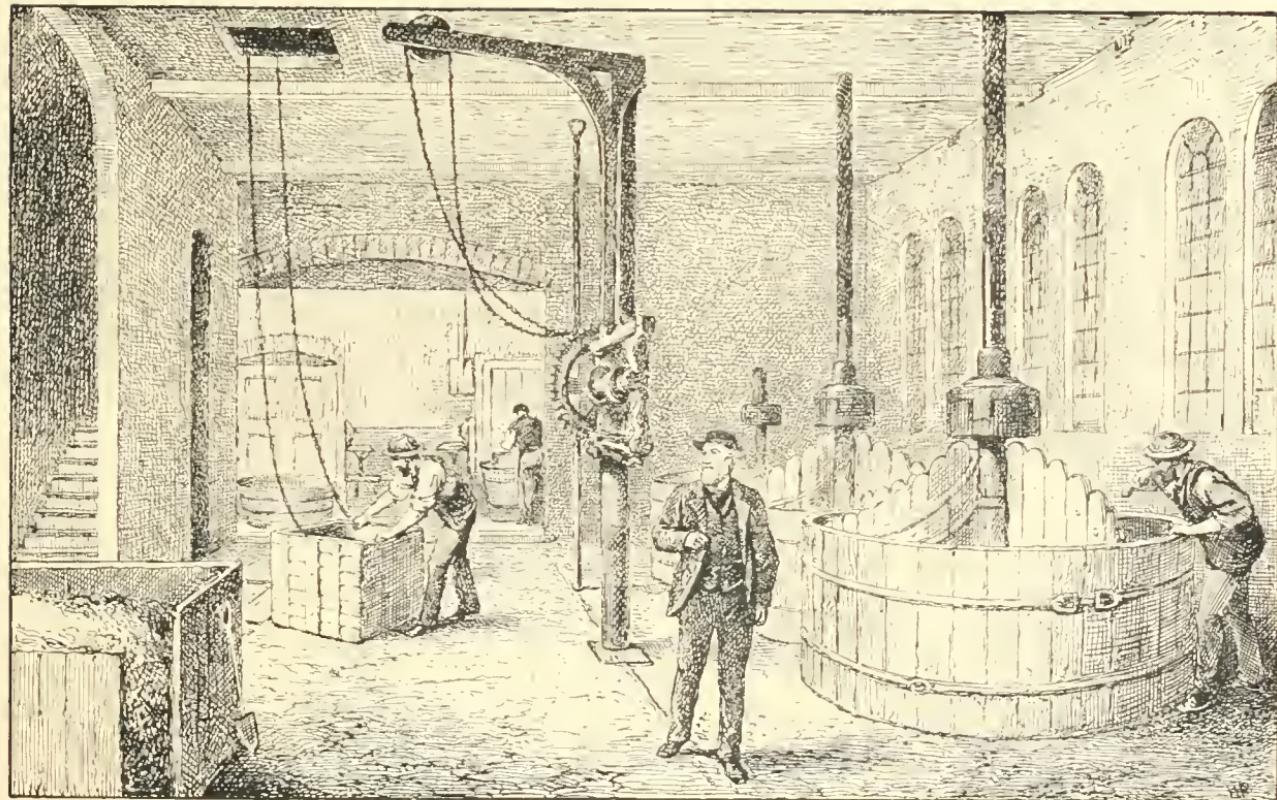
THIS department consists of a boiler-house, engine-house, and the mill, a three-story building. On the ground floor are placed the washing-pans which receive the materials from the upper stories, and the arks where the ground substances are stored.

On the first floor are large pans for grinding flint, felspar, Cornish stone, &c., &c., also pans for grinding the glazes, and a series of smaller ones for colours. Adjoining these is the Mixing Room.

On the upper story are similar large pans for grinding calcined bones, a substance extensively used in the manufacture of china, mills for grinding gold, and a series of pans for grinding colours. The room adjoining is the Laboratory.

The pans are all formed on the same model, but vary in size according to the material for which they are required. They average about 10 feet in diameter, and 3 feet in depth. These vats or pans, which are very firmly hooped together, are paved with small blocks of hard chert stone, cemented together with ground china or similar material; in the centre moves an upright shaft, to which are fixed four very strong arms radiating in curved lines, and which move the runners or grinding stones. When the materials to be ground are thrown into the pan, water is supplied to the depth of several inches, and on the mill being put in motion the particles are abraded against each other and between the runners and pavers until they are reduced to the consistency of thick cream.

As the future beauty of the porcelain depends to a great extent on the proper grinding of the materials, much attention is paid to this department.



THE MILL.

THE MILL.

The time necessary for grinding the different materials varies from twelve hours to six days; an idea of the fineness required in the grinding may be understood from the inspection of the silk lawn, which numbers about 4,000 meshes to the square inch, and through which every particle of the material used in the body or glaze must pass in the process of mixing.

The principal substances used in the manufacture of porcelain are china clay, china stone, calcined flints, felspar, and calcined bones; for the glazes—borax, lead, flint, Cornish stone, &c., &c.

CHINA CLAY.—Kaolin was first discovered in England by Cookworthy in 1768. It is the felspar of decomposed granite rock, and is found in Cornwall. According to analysis its average composition is:—

Silica,	46.
Alumina,	40.
Lime and Potash,	4.
Water,	10.

It is washed from the decomposed rock and allowed to settle in large vats, from which it is cut in blocks when dry and packed on board ship for transport to the potteries.

CORNISH STONE.—Petuntse is the decomposed granite rock found in Cornwall. It is composed of quartz, felspar partially decomposed, and a talcose material. It is quarried at St. Stephen's, in Cornwall, and is sent to the various potteries without any preparation.

FLINTS, although they may not be used in the body of the porcelain, are necessary in the manufacture. For pottery purposes boulder flints are preferred, as they are generally more free from lime than chalk flints. In order to prepare them they are placed in a kiln constructed for the purpose and calcined at a red heat; when cool they become perfectly white; in this state they are crushed and ground like the other materials.

THE MILL.

CALCINED BONES are largely used in the manufacture of English porcelain. For this purpose ox bones only are suitable. They are brought in large quantities from South America. Home-prepared bones are also used in certain proportions. These latter still retain a proportion of carbon which gives a dark colour to the porcelain clay, but all this disappears in the burning of the ware.

The use of bones is peculiar to English porcelain, and constitutes the great difference between it and the porcelain made on the continents of Europe and Asia. From the fact of this material being used, the English ware may be called a soft or tender porcelain, and that of France, Germany and China, hard porcelain.*

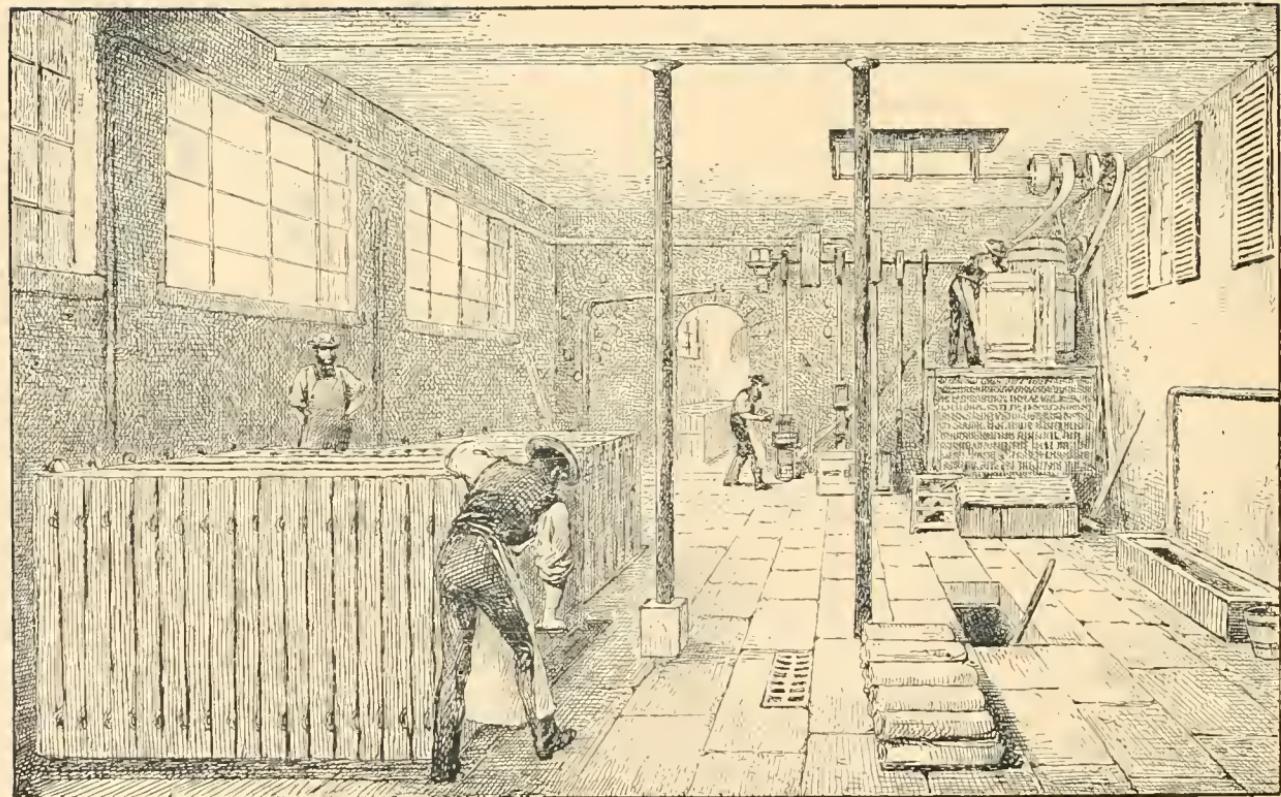
For most purposes the artificial or tender porcelain is the better article, particularly for the finer branches of ornamental work and for richly decorated services.

FELSPAR, one of the materials which is much employed, is brought from Sweden in its purest state. It is found in many parts of England and Ireland, but is too often stained with iron. This spar in its raw state is of a salmon-red tint, but becomes pure white on being calcined; it is then ground as we have described.

The materials for the GLAZE of English porcelain are ground flint, Cornish stone, borax, lead, &c. These having been weighed out in proper proportions are put in a melting furnace, called a fritt kiln. When perfectly melted together they form glass, which, in a melted state, is allowed to run into a reservoir of water, which disintegrates the mass, and allows the grinding to be more easily performed. A certain proportion of this fritt powder is used along with borax and other materials, which are all ground together, requiring sometimes ten days for the process.

Adjoining the Mill are the Clay Sheds and Mixing House or Slip House.

Brongniart divides soft porcelain into two classes—naturally soft, and artificially soft. The early pastes of Bow and Chelsea, St Cloud and Sévres were naturally soft; those of England at the present time are artificially soft.



THE SLIP HOUSE.

THE SLIP HOUSE.

The CLAY SHED contains stocks of the various clays which do not require grinding, but which are sufficiently pulverised in the state in which they are received. In this shed are several vats containing blungers, which are worked by machinery. These vats are supplied with the different materials, and when sufficiently blunged so as to form a uniform mass like thick cream, the slip (as it is called) is allowed to run into the arks or reservoirs prepared for its reception in the next room, which is called the Mixing Room or

SLIP HOUSE.

Underneath the floor of this building are large arks, which act as reservoirs for the substances from the mill and clay house. Here are the mixing pots, into which the ground materials are thrown by pumps. In the mixing pot is a shaft from which radiate arms having arranged on them rows of magnets which work through the materials so as to remove any particles of iron that may by accident or abrasion have got into them. From the mixing vat the material passes through a series of sieves worked by machinery. It is then pumped into the clay press. This is a machine where the slip is received into a number of chambers lined with linen bags, and where by hydraulic pressure the water is expressed until the mass assumes the consistency of paste. The clay from the press, being in a state of paste or dough, is taken to a vault or clay cellar, where it is regularly beaten and turned over and again beaten and kneaded to make it tough.

When the proper consistency and homogeneity have thus been imparted to the dough, it is ready for the workman. The usual methods of manufacture are three: "throwing," "pressing," and "casting," the two former with the clay in a state of paste, the latter when in a state of slip.

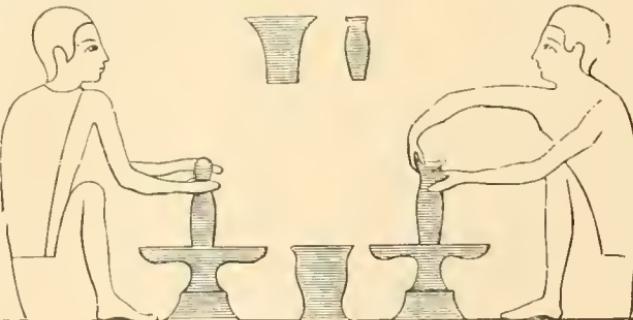
THE THROWER—THE POTTER'S WHEEL.

Plain circular articles, such as cups and bowls, and in some cases, jugs and teapots, &c., are made on the potter's wheel by the thrower. This apparatus is of great antiquity. It is certainly the oldest mechanical contrivance in connection with the art of Pottery.

THE THROWER.

In the tombs at Thebes (dating about 3,800 years ago) have been discovered drawings which exhibit the potter's art in a variety of forms : the kneader of the clay, the baller, and the thrower.

The man who works at the potter's wheel is called the thrower. He receives from his assistant a ball of clay, which he throws upon the head of the wheel or horizontal lathe before him and presses it with both hands; the rotary movement causes the clay to rise in the form of a stalk or cone which he then depresses and again



allows to rise. When the clay is thus made ready he inserts his thumb into the mass, moulding and fashioning the outsides with the other hand. In this way cups and bowls are formed. In the drawing to which we have alluded, the action of the thrower is precisely the same as at the present time, the only difference being in

THE EGYPTIAN THROWER.

the motive power which turns the wheel. In Egypt it was given by the left hand applied directly to the wheel. In China the motion is given in various ways—by the hand, by the foot, and by a loose strap ; on the Continent of Europe, by the foot of the workman.

THE NEXT ILLUSTRATION

shews the usual English system. At the Royal Porcelain Works, and at most of the large manufactories, steam power is now used, and the thrower regulates the speed of the wheel by a motion of his foot.

Formerly all cups and hollow pieces, as jugs and teapots, were made on the wheel ; in modern times the greater part of these objects are made in moulds, which not only ensure correctness of size, but admit of patterns being embossed on the surface without extra labour to the workman.



THROWING AND TURNING ROOM.

THE TURNER.

THE THROWER having formed the cup or "lining" * as it is called, afterwards presses it into a mould. In a short time this mould will have absorbed sufficient moisture from the clay to allow it to become detached ; it is then taken out and is ready for

THE TURNER.

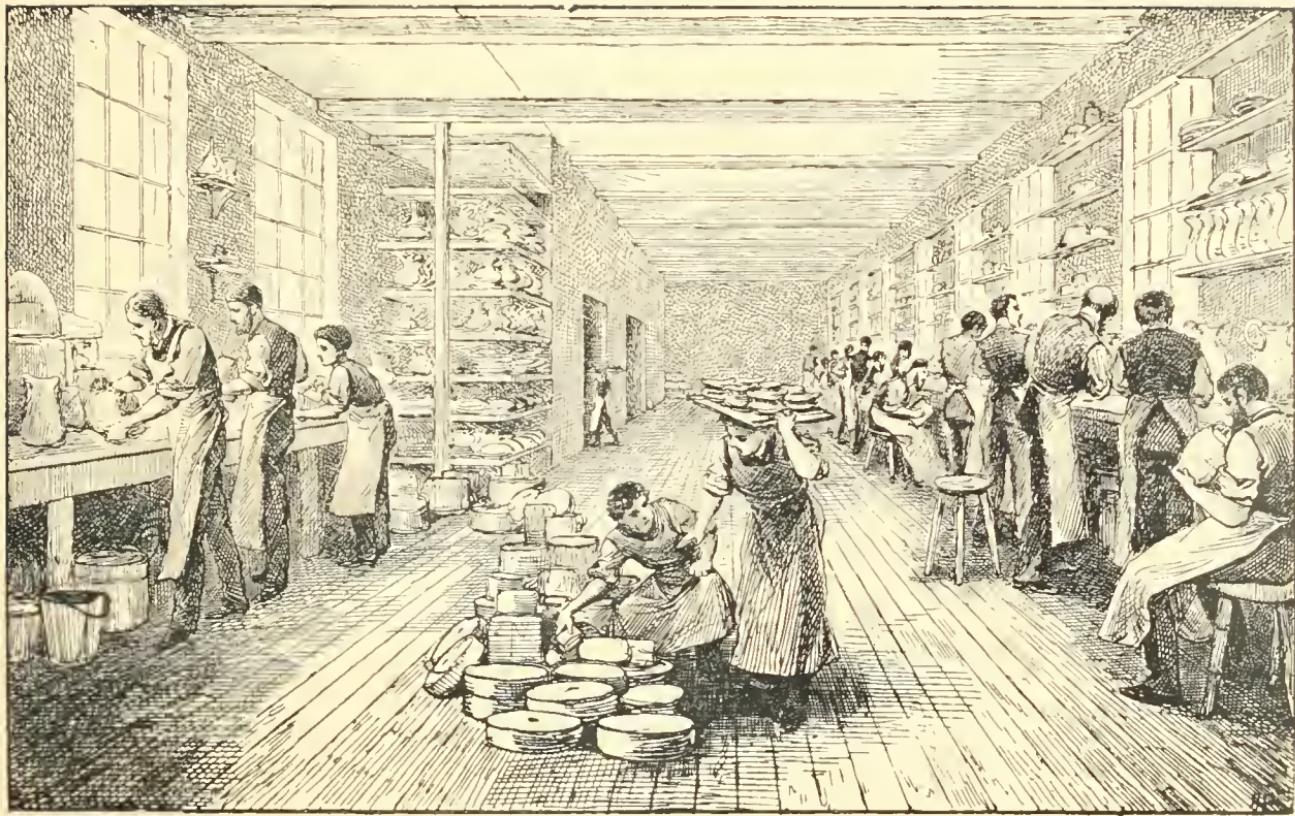
THE TURNER fixes the ware upon his lathe and treats it much the same as he would a piece of wood or metal. He finishes the edge and foot and if necessary the outside surface. Having completed the form of the cup it is passed to the Handler.

Handles are pressed in moulds, and, whether for tea cups or vases, undergo the same process of trimming and fitting, which is speedily done by the workman, who next proceeds to fix it on the cup with a little liquid clay called slip. This clay acts as a cement and, being of the same material, unites the two parts when burnt in the oven. All objects with handles go through a similar process.

The manufacture of plates and dishes is called FLAT PRESSING, and the process is very different from that just described.

For plates the clay is weighed into balls, which are beaten out into flat circles like pancakes. The mould that gives the form to the face of the plate or saucer is fixed on a horizontal lathe called a jigger. It is then covered with a disc of clay which is pressed firmly on to the mould whilst it revolves very quickly. The workman then takes a tool called a profile, fitted to the edge of the mould, and which on being pressed in the centre causes the foot to rise in a perfect circle. The mould, with the plate upon it, is next placed in the stove to dry. When the heat causes the plate to contract from the mould, it is taken off and finished in a semi-dry state. The plate is then ready to be burned, and the mould is ready to receive another charge.

* The articles formed by the Thrower in the presence of visitors are made to show the power and working of the Potter's Wheel, but are of no use as manufactured articles, cups being made in moulds, and saucers by a process afterwards described as Flat Pressing.



PRESSING ROOM.

PRESSING.



PRESSING ROOM.

The manufacture of soup tureens, covered dishes, ewers, basins, &c., is called HOLLOW WARE PRESSING. These objects are all made in moulds. The workman first prepares a slab of clay, and having carefully placed it in the mould he bosses it with a wet sponge, and presses it into every line of the pattern. The mould after a little time absorbs sufficient moisture to allow the clay to contract and the piece is easily removed.

ORNAMENTAL POTTERY.

CASTING.

CASTING, one of the most interesting processes of potting, is shown in the *Figure Making Department*.

When a figure of any shape or size has been finished by the modeller, it is cut into pieces to be moulded. The mould-maker is most careful to arrange that each part shall be delivered from the mould in perfect condition and with as little seam as possible. A figure when thus cut up and moulded may be represented by from twenty to thirty moulds, each containing a separate part.

The china for this process of manufacture is not used in a clay state, but as a liquid slip like thick cream. This is poured into the orifice of the mould, left for the purpose, and then allowed to stand for a short time; when sufficient slip has adhered to the mould the remainder is poured back into the casting jug. The slip having remained in the mould for some minutes becomes sufficiently solid to enable the workman to handle it. He next proceeds to arrange all the pieces on a slab of plaster before him. He then trims the superfluous clay from each, and applies some liquid slip to the parts and so makes a perfect joint, each part being fitted to its proper place, until the whole figure is built up as it was before it was moulded; as each joint is made, the superfluous slip is removed with a camel's hair pencil.

The object is next propped with various strips of clay having exactly the same shrinkage, and is then ready for the oven.

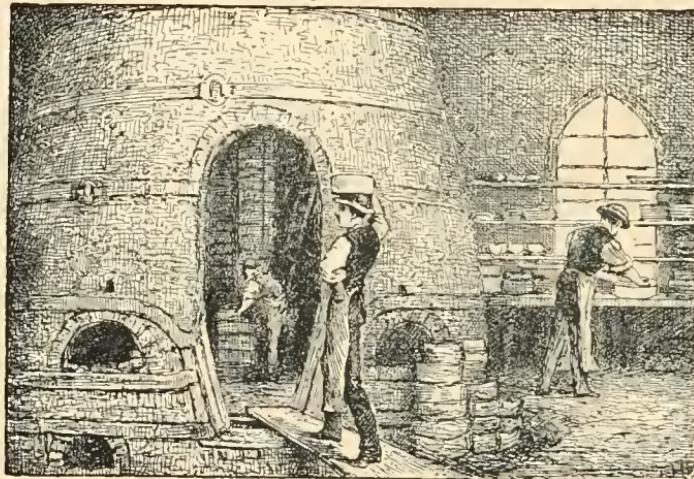
This shrinkage or contraction to which we have alluded is one of the most important changes, as well as one of the greatest difficulties, encountered in the art of pottery.

The change will be more or less according to the materials used, and the process employed in making. Thus earthenware will not contract so much as porcelain, and a pressed piece will not contract so much as a cast one.* The contractions are sufficiently well known to the modeller, and he makes allowance in the model accordingly, the design being fashioned so much larger than is actually required; the shrinkage from the original model to the finished object being sometimes equal to 25 per cent.

The ware up to this point in all the stages of manufacture we have described is most tender, and can only be handled with the greatest care.

* The shrinkage arises from two causes: first, from the loss of water which in a highly plastic paste may cause contraction to the extent of upwards of 15 per cent; and secondly, if the body be formed of readily fusible substances, a further diminution of bulk arises from the closer *juxta-position* of the component particles by incipient fusion, and this amounts frequently to from 10 to 15 per cent.

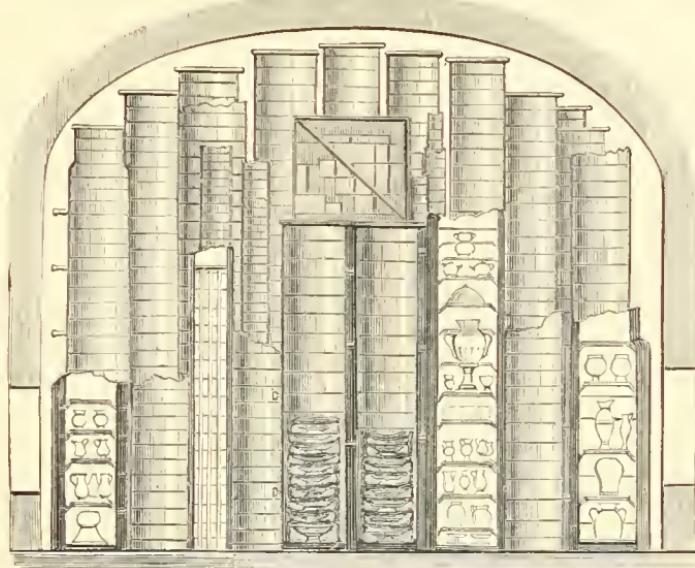
BISCUIT KILN AND PLACING HOUSE.



BISCUIT KILN AND PLACING HOUSE.

The manufactured objects being now ready for baking are taken to the placing house of the biscuit oven, where may be seen some hundreds of seggars, of all shapes and sizes. These seggars, which are made of fire-clay and are very strong, are the cases in which the ware is to be burnt. Common brown wares, when the fire is comparatively easy, may be burned without any protection, as the fire or the smoke cannot injure them ; but for porcelain or white earthenware these cases are necessary.

THE MODE OF FIRING.



INTERIOR OF BISCUIT OVEN.

The seggars are made of various shapes to suit the different wares. Flat round ones are used for plates, each china plate requiring its own seggar and its own bed in it, made of ground flint very carefully prepared, for the china plate will take the exact form made in the bed of flint.

THE MODE OF FIRING.

Cups and bowls are placed, a number of them together, in oval seggars, ranged on china rings to keep them straight. These rings must be properly covered with flint to prevent them adhering to the ware burned upon them.

The seggars when full are piled one over the other most carefully in the oven, so as to allow the pressure to be equalised as much as possible ; this is absolutely necessary, as, when the oven is heated to a white heat, the least irregularity of bearing might cause a pile to topple on one side and possibly affect the firing of the whole oven, causing a great amount of loss.

Calcined flint is used for the purpose of making beds for the ware, because being pure silica it has no melting properties, and will not adhere to the china.

The form of the china oven seems to have been much the same in all ages, viz., that of a cone or large bee-hive.

A china oven is generally about 14 feet in diameter inside. It is built of fire-bricks, and is encased several times round with bands of iron to prevent too great expansion from the heat inside. There are generally eight fire-places round the oven, with flues which lead directly into the oven in different directions.

A china oven takes about forty hours to fire ; it is then left to cool for about forty-eight hours.

In order to test the burning, the fireman draws small test cups through holes in different parts of the oven made for the purpose. These tests show both by contraction and the various degrees of translucency the progress of the fire. The test holes are carefully stopped with bricks so that cold air cannot be drawn into the oven.

The porcelain having been burnt is now in a state called biscuit ; it is translucent and perfectly vitreous. Having had the flint rubbed off the surface and been carefully examined it is sent into

THE DIPPING ROOM.

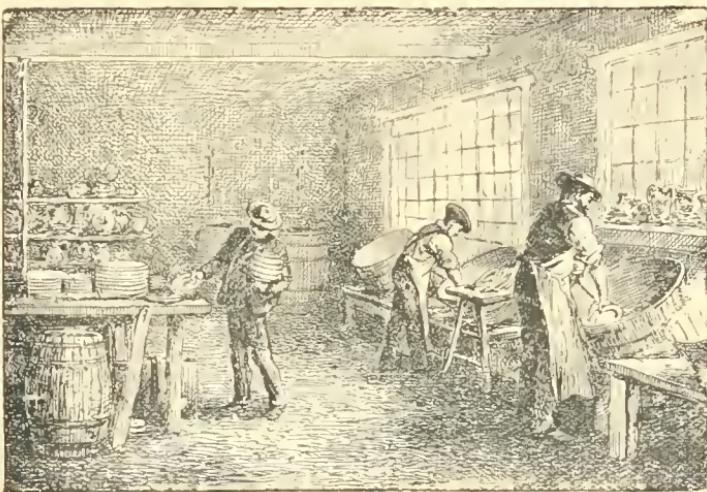
The dipping room is supplied with large tubs of the various glazes suitable to the different kinds of ware.

The glaze is really a glass, which is so chemically prepared of borax, lead, flint, &c., &c., that when burned it will adhere to the porcelain and will not craze or crackle on the surface.

This glaze is ground very fine (being on the mill for about ten days) until it assumes the consistency of cream.

The process of glazing is simple, but requires a practised hand, so that every piece may be equally glazed and the glaze itself equally distributed over the surface.

THE GLAZING DEPARTMENT



THE DIPPING ROOM.

From the dipping room the ware is brought into the drying stove, where the glaze is dried on the ware. It is then taken by women into the trimming room, where any superfluous glaze is taken off and defective places are made good. From this room it is taken to the glost oven placing house, where the greatest care and cleanliness are required, as should any dust or foreign substance get on the glaze, it will adhere in the fire, and very likely spoil the piece.

THE DECORATING DEPARTMENT.

The glost oven is of the same construction as the biscuit. It takes sixteen hours to fire, and the tests are made in the same manner as in the biscuit oven. In about 36 hours the oven will be sufficiently cool for the ware to be removed. It is then sent into the White Warehouse, where it is sorted and stored until required for decoration by the painters and gilders.

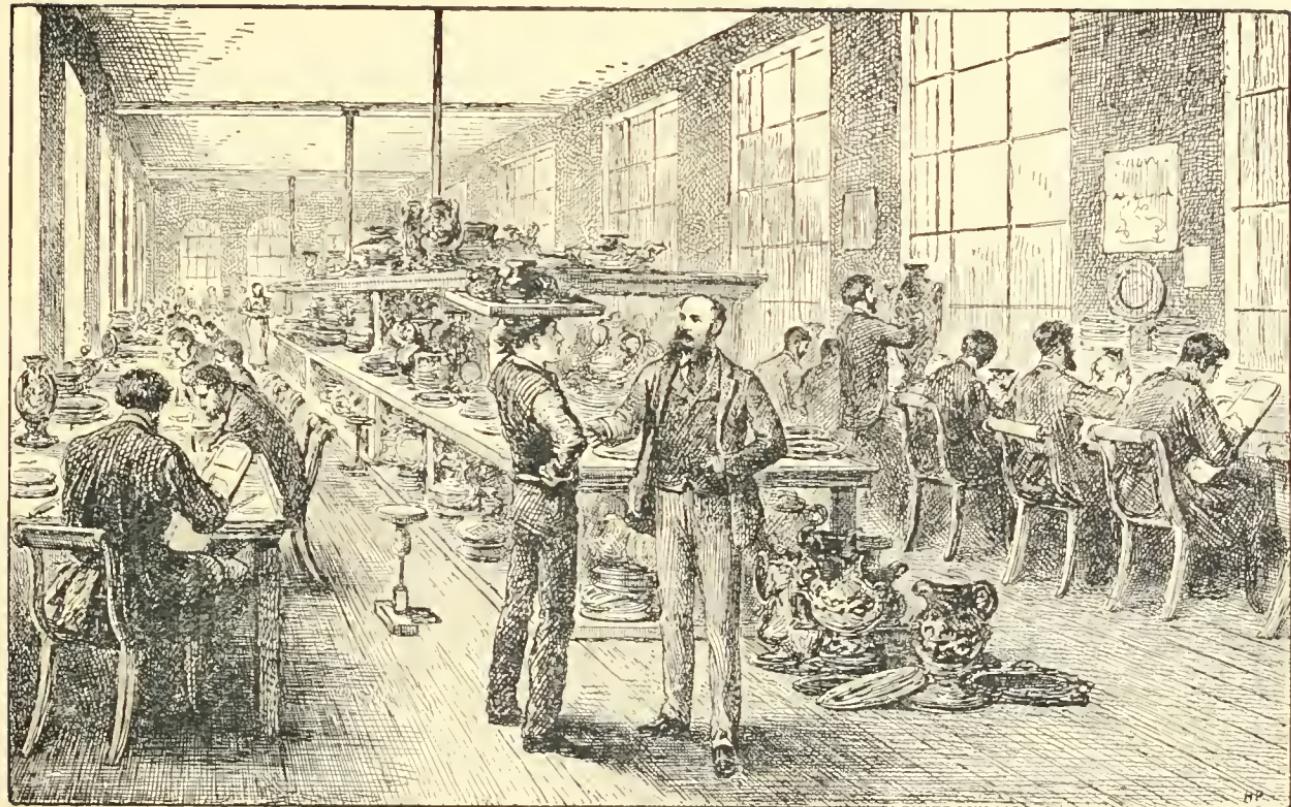
Visitors generally look forward with pleasure to the mysteries of the Decorating Department. It is interesting to watch the painters, some engaged on landscapes, others on birds, or flowers, or butterflies. All are interested in their work, which to the uninitiated may appear at first sight to be very unpromising, the colours being dull and the drawing unfinished. As the work advances it will be better understood. After the first "wash-in" has been burned and the painter has worked upon it for the second fire, the forms and finish both in style and colour begin to appear.

The colours used are all made from metallic oxides, thus, copper gives green and black ; cobalt, blue ; gold, purple ; iron, red ; &c.

The painters are trained from about 14 years of age under special instructors ; they thus acquire a facility of drawing and general manipulation of the colours which it is found almost impossible to attain at a later period in life.

The gilding process is carried on in rooms adjacent to the painting. The elaborate and finely executed patterns in gold are all traced by the hand. The workmen require special training for this department also, correct drawing and clean finish being absolutely necessary. For the purpose of getting correct circles and speedy finish on circular pieces, a simple mechanical contrivance is used. A small table or stand with a revolving head receives the plate, or saucer, or cup, which is carefully centred, so as to run truly. The workman then having filled his pencil with gold, fixes his hand upon the rest, applies the pencil to the edge of the piece, and gently turns the table head round ; the edge is thus formed in a moment in the most perfect manner.

The gold used for decorating porcelain is the purest that can be obtained from the assayer. It is supplied to the factory in brown grains like ground coffee. The chemist then mixes with it a little flux to make it adhere to the ware, and a proportion of quicksilver (which all flies off in the kiln) to reduce it for grinding. It is next ground on a mill for about thirty hours, and it is ready for the workman.



DECORATING ROOM.

THE DECORATING DEPARTMENT.

As seen in use it looks more like printer's ink than precious gold ; its true character is revealed after it has passed through the enamel kiln.

As nearly every process of decorating porcelain is performed on the glazed surface of the ware, special kilns are arranged for burning the colours and gold, that they may adhere or sink into the glaze. In proportion as this operation is properly performed, so will the colours be more or less bright and beautiful. The kilns used for this purpose may properly be called muffles, as they are similar in principle to those used by goldsmiths, only much larger in size. They are heated on the reverberating principle, the fireplaces (which vary in number according to the size of the kiln) being at the side, and the flues going round the kiln.

Great care is required in placing the ware in its finished state, as any particle of dirt, or the mark of a dirty finger, or a rub on colour or gold will all be shown on drawing the ware, and will necessitate another firing and consequent additional risk.

The Worcester Porcelain Works were the first to introduce printing on porcelain with any amount of success. The process has been continued ever since the year 1756, but the character of the work has been to some extent altered. In the early days of its introduction it was principally used to print patterns in cobalt blue in imitation of Chinese painted patterns. It was also much used, and probably in its earliest days, as a means of decorating objects with fine line engravings in black or red, and in such cases the object came finished from the printer's press. Printing is still used in this manner for common wares ; but in the Worcester Works it is generally employed to give the outline to a pattern, and by this means save the trouble in drawing, the colouring of the pattern being done by other hands, principally females.

Printed patterns pass through the enamel kiln fire like other decorative processes.

The time required for enamel kiln firing is about six hours.



PRINTING ROOM.

THE BURNISHING ROOM.

BURNISHING AND CHASING.

When the ware is drawn from the enamel kiln it is carefully sorted. That which has to be re-painted or re-gilt is sent to its proper destination, and that which is finished is sent into the Burnishing Room, where it is distributed to a number of women who perform this last operation. The gold is now of a dull yellow colour, but after it has been carefully cleaned and a burnisher of bloodstone or agate has been quickly rubbed over it, it assumes the beautiful bright appearance of burnished gold.

When patterns are chased upon the gold, a tool with a fine point formed of agate is used, by which only those parts to be polished are touched, leaving the dead gold to show a relief in colour.

From the burnishing room the ware is sent into the warehouse, where it is distributed to the various orders for which it has been made. It is then papered up and packed.

The visitors having now been conducted through the various representative* departments of the manufactory, and having seen how the meanest material in nature, "clay," can be made to assume the most beautiful forms, and by the application and combination of science and art to become more valuable than the precious metal itself, will, we feel assured, be more ready to appreciate the finished article, whether in the form of a simple cup and saucer or plate, or the most elaborately decorated vase.

SHAW, when writing on Staffordshire pottery, says: "To give our readers some idea of the various ramifications of a single piece of *earthenware* before it arrives at completion, we may note that at the present day to produce the commonest painted bowl used by the poorest peasant wife to contain the breakfast for her rustic husband, the clays of Dorset and Devonshire, the flints of Kent, the granite of Cornwall, the lead of Montgomery, the manganese of Warwickshire, and the soda of Cheshire, must be conveyed from their respective districts, and by the ingenious processes, the results of unnumbered experiments, be made to combine with other substances apparently as heterogeneous, obtained from other nations."

* The workshops exhibited are selected as being the most likely to interest, whilst they are types of many others. The rooms in which the higher classes of decoration are carried on are not shown, as the interruption of visitors would disturb the artists at their work



THE BURNISHING ROOM.

THE NUMBER OF PROCESSES.

“ An ordinary piece of ware will pass through, on the average, at least 18 different hands or processes, after the materials arrive on the ground, before it can be sent out in a perfect state, viz., the miller, the slip maker, the preparer of clay, the baller, the thrower, the carrier, the turner, the handler, the biscuit fireman, the scourer, the dipper, the glost fireman, the sorter, the printer, the painter, the gilder, the enamel fireman, the burnisher.”





HISTORICAL SKETCH OF THE ROYAL PORCELAIN WORKS.



The issue of a new edition of our Guide Book affords us the opportunity to say a few words on the History and productions of our Manufactory.

Founded by Dr. Wall, as a Joint Stock Company, for the purpose of making *fine porcelain*, it has been the aim of the different firms composing the uninterrupted sequence of proprietors to maintain the high character obtained on its establishment.

In the early part of the last century, the manufacture of Porcelain had engaged the attention of the Princes of Europe ; it was becoming famous in England both at Bow and Chelsea, at the latter place under the French director Sprimont, producing fancy articles of a very high class as well as richly decorated services all more or less of a French character.

It was at this period, in 1751, that DOCTOR WALL invented the porcelain for which Worcester became so celebrated. No porcelain in the country has surpassed the early specimens in that fineness of texture, translucency of paste, and perfect homogeneity of body and glaze which are the special features required in a true porcelain.

WORCESTER PORCELAIN.

Worcester had neither coals, nor clay, nor skilled hands ; but this talented physician, who was also a clever chemist and an accomplished artist, by his scientific skill, produced one of the most beautiful porcelains in Europe.

The introduction of soap-rock constituted a new feature, and continued to be a Worcester speciality up to the end of the last century. A variety of fine porcelains has been made at various times, notably that called "The Regent" for the services made for King George the IV when Prince Regent.

The porcelain body at present in use at the manufactory is a special composition, the result of many years' experience.

In a large manufactory like The Royal Porcelain Works, there are great varieties of wares always in process of manufacture, and visitors will probably notice the ornamental objects as the most attractive ; nevertheless, the variety of styles and patterns in the Service department will be found worthy of attention.

Between forty and fifty years ago, a semi-porcelain was introduced by Messrs. Chamberlain, and having undergone many changes and improvements it is now established under the name of "*Royal Worcester Vitreous Ware*." It is used for the Royal Navy, Clubs, and Messes, and all kinds of useful services requiring strength and durability ; it will not craze, and the fracture being vitreous will not absorb grease or moisture.

"*Ivory Porcelain*," which has become so celebrated, was invented at The Royal Porcelain Works, and introduced for the production of decorative objects, vases, figures, &c. The great success of this material has been owing to the delicate ivory tone with the coloured gold and bronzes that form a leading feature in "*Royal Worcester*" decorations.

The decoration of Porcelain, assuming as it does a characteristic style, has always excited considerable interest, and Worcester wares are not an exception. At an early period the manufactory copied the Oriental styles so exactly, that it is even now difficult to tell the one from the other.

WORCESTER PORCELAIN.

The proprietors were at all times ready to welcome inventions which would add to the popularity of their wares, and the first which seems to have attracted attention was the invention of Transfer Printing. This invention, which has done so much to popularize pottery throughout the world, and is now being applied to so many purposes and materials, was first used in the decoration of porcelain at Worcester.

Assiduous antiquarian research has shown that the invention was introduced in the enamel works at Battersea, which establishment was closed in 1756, and both the art and the artist were thrown upon the world. The principal artist, so far as can be ascertained, was R. Hancock, and he found a congenial home at Worcester, his high-class work being quite in accord with the refined taste of the managers of that establishment.

The styles adopted at Worcester were very varied, but were generally selected from the finest examples of Japanese and Chinese and Dresden manufacture, as well as the very beautiful wares of Sèvres and Chelsea; but whatever style was produced, it was made to bear a Worcester character, and, with the exception of Chelsea, no English works bear evidence of so much loving care in their production. It is certain that from about 1760 to 1775 some extremely beautiful wares were produced, both in vases and services. The specimens which have lately been brought to light have never been excelled in England.

Doctor Wall died in 1776, and the remaining partners carried on the works with spirit and success until the year 1783, when the whole establishment was sold to their agent Mr. Flight, of London. The business was conducted by his two sons Joseph and John till 1792.

In 1788 George III. visited the Worcester Works, and granted his warrant permitting the establishment henceforth to be called "Royal."

WORCESTER PORCELAIN.

In 1793 Mr. Barr joined the concern and the firm of Flight and Barr commenced. It continued without variation until 1807, when Mr. Barr, jun., was taken into partnership, and the title was altered to Barr, Flight, and Barr, and lasted until 1813. On the death of Mr. Barr, sen., a younger son was taken into partnership and the firm changed to Flight, Barr, and Barr, which was continued till 1840, although Mr. Flight had died in 1829. The establishment was united to that of Messrs. Chamberlain in the former year, 1840.

Mr. Chamberlain, who had been engaged with the original company under Dr. Wall, left the works when they were sold to Mr. Flight, and commenced business on his own account.

The firm from 1786 to 1798 was Robert Chamberlain, senr., Humphrey Chamberlain, and Richard Nash (sleeping partner); from 1798 to 1804 the firm was Humphrey Chamberlain and Robert Chamberlain, jun.; from 1804 to 1811 Humphrey Chamberlain, Robert Chamberlain, and Grey Edward Boulton (sleeping partner); from 1811 to 1827, Humphrey Chamberlain and Robert Chamberlain; from 1827 to 1840, Walter Chamberlain and John Lilly.

The united firms in 1840 were constituted a Joint Stock Company: Walter Chamberlain, John Lilly, Martin Barr, George Barr, and Fleming St. John, Managing Directors.

The Company was dissolved in 1848, and the firm was again Walter Chamberlain and John Lilly.

In 1850 another change was made, and the style became Walter Chamberlain, Frederick Lilly, and W. H. Kerr.

From 1852 to 1862, W. H. Kerr and R. W. Binns.

In 1862 commenced the present Joint Stock Company.

In the early part of the present century Worcester had but few competitors in the manufacture of first-class porcelain. The patronage of the King and Royal Family, which was liberally accorded, stimulated the production of both fine porcelain and artistic decorations.

WORCESTER PORCELAIN.

Messrs. Chamberlain entered largely into the manufacture of porcelain buttons made of dry clay by pressure, but a dispute about the patent in 1850 and the introduction of a similar article from France put an end to the business.

The manufacture of encaustic tiles was also introduced by Messrs. Chamberlain. These had a great and deserved success. This business was transferred to Messrs. Maw in 1851, and by them shortly after removed to Broseley, where the establishment has been greatly extended, and has obtained a very high position.

The second century of the Royal Porcelain Works commenced with a new proprietorship : Mr. Kerr, who had been a partner in the former firm with Mr. Chamberlain and Mr. Lilly, was now joined by Mr. Binns ; the buildings of the manufactory were largely extended and considerable progress was made in giving a higher tone to its productions, which received high praise at the Exhibitions of 1853, 1855, and 1862 ; in the latter year the business was formed into a Joint Stock Company, since which time further large additions have been made to the works, which now employ more than 600 persons, and increased reputation has attended their productions. The highest award (the Diploma of Honour) was obtained at Vienna, and at Paris the Gold Medal.

THE PARTNERSHIP DEED OF THE WORCESTER PORCELAIN COMPANY IN 1751.

The original Deed relating to the formation of this Company in 1751 has recently been discovered. It is very interesting, both in giving the names of the original proprietors, and the terms upon which the company was formed.

ROYAL VISITS.

The visit of King George III and Queen Charlotte to the Porecelain Works commenced a new era in the history of the manufactory. The King granted his warrant, and having recommended that an establishment should be opened in London, the Royal Family and the Nobility generally speedily availed themselves of the facilities thus offered. The interesting specimens in the Museum bear evidence to the extent of that patronage.

WORCESTER PORCELAIN.

The following Royal visits are on record :—

King George III.

Queen Charlotte.

George Frederick, Prince of Wales.

The Duke of Gloucester.

The Duke of Sussex.

The Duchess of Kent.

The Princess Victoria.

Queen Adelaide.

The Duke of Cambridge.

The Princess Christian.

Albert Edward, Prince of Wales.

The Princess of Wales.

The Queen of the French.

The Duke de Nemours.

The Duchess of Teck.

The Duke and Duchess of York.

ROYAL APPOINTMENTS.

The Royal Porcelain Works have also been honoured with numerous appointments from the Royal Family, among them being the following :—

1789—His Majesty George the Third.

1807—H.R.H. The Prince of Wales.

1808—H.R.H. The Princess of Wales,

1814—H.R.H. The Princess Charlotte of Wales.

1830—H.R.H. The Duchess of Kent.

1834—Their Royal Highnesses The Duchess of Kent and The Princess Victoria.

HER MAJESTY THE QUEEN.

And also a special appointment to His Majesty The Emperor of Austria and the Imperial Court at Vienna.





IN March, 1889, the old-established Worcester China Works of GEORGE GRAINGER & CO. were taken over by the Proprietors of The Royal Porcelain Works, and are carried on as a separate Establishment; the various Wares produced there being marked with the Registered Trade Mark shewn above.



MARKS ON WORCESTER PORCELAIN.

IN publishing the marks on Worcester Porcelain we desire to state, for the benefit of collectors, that many of the best specimens are not marked, and a large number bearing marks of repute are of little value. It does not therefore follow that because a piece is marked it is of high value. Advantage has been taken of the demand for certain marks, and they are frequently counterfeited; it is, therefore, necessary that great care should be exercised in purchasing specimens represented to be "Old Worcester."

The marks we give have been found upon old Worcester porcelain, but many of them are only copies of Oriental devices. The painter, in copying the patterns from some Oriental piece, has completed his work by copying the device on the back also. But it is evident that such mark was not intended to deceive, as in many cases the Worcester crescent is placed along with it.

The old Worcester marks, the crescent, the square, and the letter **W**, are registered trade marks of The Royal Porcelain Works.

Nos. 1, 2, 3 appear on all kinds of Worcester china from 1752 to about 1800. The crescent is the true Worcester mark; it was taken from one of the quarterings in the Warmstry arms.

Nos. 4 and 5.—The crescents with addition are not common; they are generally on blue ware.

MARKS ON WORCESTER PORCELAIN.

Nos. 6, 7, 8, 9, 10.—The W mark is found on a great variety of patterns of early date.

Nos. 11, 12, 13 are the square marks so much sought after, and which are frequently counterfeited.

Nos. 14, 15.—Also square marks, but not so common.

Nos. 16 to 22 are copies of Chinese and Japanese patterns, and generally appear on wares of that class.

Nos. 23 and 24, and 28 and 29 are old imitations of the Dresden mark, but they appear on many styles of ware, sometimes even on black print.

Nos. 25, 26, 27 appear only on black transfer prints between 1756 and 1774.

No. 30 has been found impressed in the ware 1783 to 1791.

No. 31.—In blue under glaze for the same period.

No. 32 appears on the Royal service made for the Duke of Clarence.

No. 33.—This letter is found scratched in the clay after Mr. Barr was taken into partnership ; from 1793 to about 1800.

No. 34.—From 1793 to 1807.

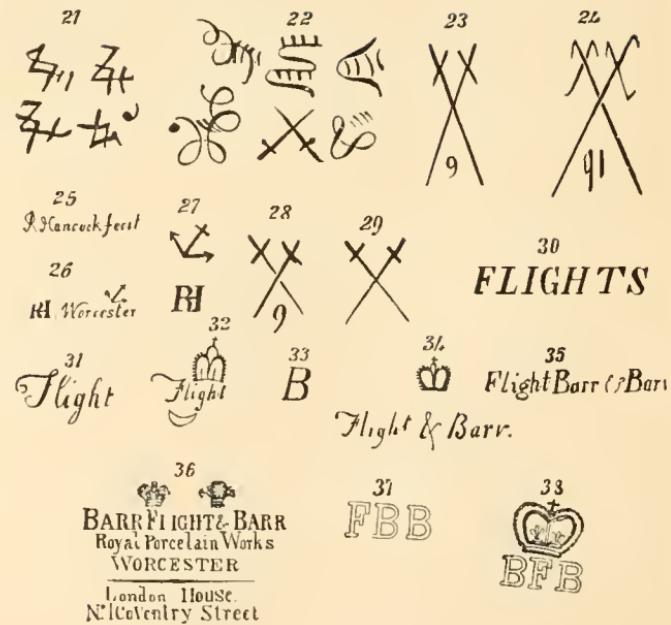
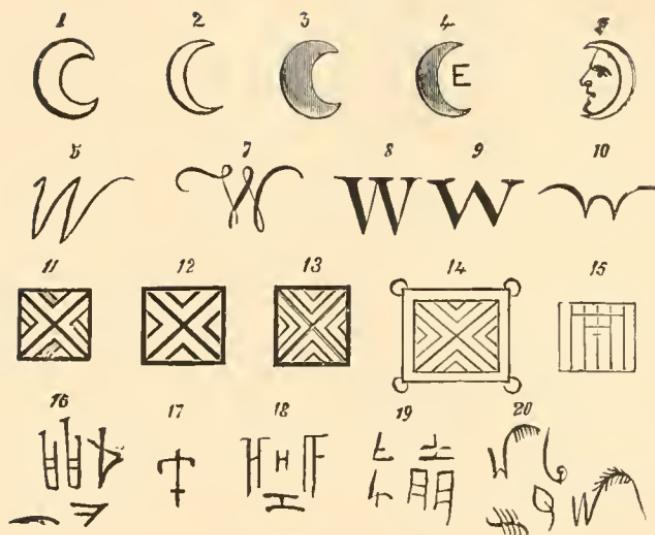
Nos. 35 and 37.—From 1807 to 1813.

Nos. 36 and 38.—From 1813 to 1840.

No. 39.—Used by Chamberlains, written with and without "Worcester," from 1788 to about 1804.

No. 40.—Written on specimens in 1814.

MARKS ON WORCESTER PORCELAIN.



MARKS ON WORCESTER PORCELAIN.

39
Chamberlains
Worcester

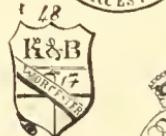
40
Chamberlains
& 63, Piccadilly,
London.

41
Chamberlains
Worcester
& 155,
New Bond Street, London
Royal Porcelain Manufacturers.

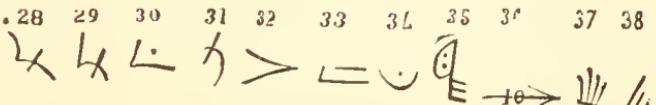
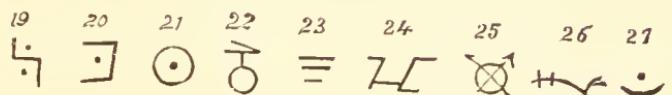
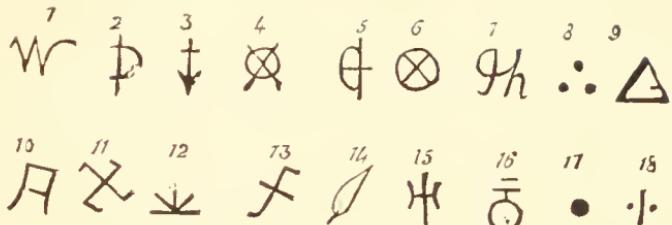
43

CHAMBERLAIN & CO.,
WORCESTER
155 NEW BOND ST.,
& NO. 1,
COVENTRY ST.,
LONDON.

45
CHAMBERLAINS



42
Chamberlains
Regent China,
Worcester
& 155,
New Bond Street
London.



MARKS ON WORCESTER PORCELAIN.

No. 41.—Printed mark used from 1814 to about 1820.

No. 42.—Printed mark used from 1820 to 1840.

No. 43.—Printed mark used between 1840 and 1845.

No. 44.—Printed mark used in 1847.

No. 45.—Used between 1847 and 1850; sometimes impressed in the ware, and at other times printed upon it.

No. 46.—Mark used in 1850 and 1851.

No. 47.—Mark used by Kerr and Binns from 1852 to 1862.

No. 48.—Mark used by Kerr and Binns on special pieces.

No. 49.—Mark used by the present Company from 1862.

The figures used in the concluding series are considered to be workmen's marks, and are generally, if not exclusively, found on blue painted wares.



WORCESTER PORCELAIN.

AMONG THE SPECIAL AWARDS MADE TO

The Royal Porcelain Works

WE MAY NOTE

THE DIPLOMA OF HONOUR AT THE VIENNA EXHIBITION, 1873;

(The Highest Award)

AND AT

PARIS IN 1878, THE GOLD MEDAL,

AND THE FOLLOWING COMMENDATION FROM M. LAMIERE,

(Commission of Instruction and the Fine Arts).

"We must place here, highest in rank, the productions of the Worcester Manufactory. They are distinguished from all others by skill and accurate judgment in Ceramic Art, and by great perfection in the execution."

CHICAGO EXHIBITION, 1893.

At the Great International Exhibition held in Chicago in 1893, the Judges' Award upon the display of the Royal Porcelain Works was as follows:—

Royal Worcester Ware.

AWARD.

“A beautiful collection of Fine Art and other Pottery of various kinds. It is remarkable on account of the purity and translucency of the body of the ware; the artistic excellence of the forms; the sharpness of the modelling; the artistic character of the designs; the beauty of the coloured Gold and Bronzes used in the work, and the perfect harmony of the colouring; the quality of the raised Gold.

“A number of Figures of considerable beauty and fine modelling are also exhibited.

“The Vitreous Ware also is specially worthy of notice. It has a fine hard body, is well glazed, and calculated to wear well in use.”

non-circulating



